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10/661,551	09/15/2003	Shane Ching-Feng Hu	M4065.0975/P975	9046

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EXAMINER	
GEBRIEL, SELAM T	

ART UNIT	PAPER NUMBER
2622	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/661,551	HU ET AL.	
	Examiner	Art Unit	
	SELAM T. GEBRIEL	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim16 is objected to because of the following informalities: "**Said peripheral bus"** lack antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 4 – 7, 10 – 12, 14, 19, and 22 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Takahashi et al (US 2002 /0080247 A1) in view of Skow et al (US 7,173,663 B2).

4. Regards to claim 1, Takahashi discloses an automatic exposure control and automatic gain control circuit (Figure 13), comprising:

Global control registers (Figure 3, Element 9 and Element 25, Page 3, Section 0053) for defining tiles of an image and assigning weights to said tiles (Page 4 and 5, Section 0088 - 0091See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 - 00223); and

A module (Figure 3, Element 25) for generating and using a histogram

based on said x-y coordinates, said tiles, and said assigned tile weights, said module using said histogram to provide an adjustment to analog exposure and gain control registers (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 - 00223).

Takahashi failed to clearly disclose a translation module for transforming an input data stream into x-y coordinates corresponding to said input data stream.

However Skow discloses color interpolation algorithm 600 for transforming a pixel or an input data into I or x and J or y coordinates (Col 11, Line 30 – 37, See also Figure 4 and 5).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the automatic exposure control of Takahashi with color interpolation algorithm 600 of Skow. The motivation to do so is to ease of tracking on each pixel or input data by converting the pixel or the input data in and X- Y or I – J coordinate (Col 11, Line 30 – 56, See also Figure 4 and 5).

5. Regards to claim 4, Takahashi in view of Skow discloses the automatic exposure control and automatic gain control circuit according to claim 1,

Wherein said input data stream (Image data, Takahashi) comprises digital signal values from an analog-to-digital converter (Figure 3, Element 11, Takahashi) of a sensor array (Col 3, Section 0053, Takahashi).

6. Regards to claim 5, Takahashi in view of Skow further discloses the automatic exposure control and automatic gain control circuit according to claim 1, further comprising:

A video input module (Figure 1, Element 132, Skow) for receiving said input data stream and forwarding said input data stream to said translation module (See Figure 1, Skow).

7. Regards to claim 6, Takahashi in view of Skow further discloses the automatic exposure control and automatic gain control circuit according to claim 1, Wherein said module for generating and using said histogram further comprises:

A histogram generator (Figure 3, Element 25, Takahashi) receiving said input data stream, said x-y coordinates, said tiles, and said assigned tile weight (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 – 00223, Takahashi); and

A control module (Figure 3, Element 25) providing said adjustment to said analog exposure control and analog gain control registers, said control module using said histogram created by said histogram generator, said tiles and said assigned tile weights to calculate said adjustment (Page 4 and 5, Section 0088,

0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 – 00223, Takahashi).

8. Regards to claim 7, Takahashi disclose an imaging processing apparatus (Figure 3), comprising:

Global control registers (Figure 3, Element 9 and Element 25) for defining tiles of an image and assigning weights to said tiles (Page 4 and 5, Section 0088 - 0091See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 - 00223); and

A module (Figure 3, Element 25) for generating and using a histogram based on said x-y coordinates, said tiles, and said assigned tile weights, said module using said histogram to provide an adjustment to analog exposure and gain control registers (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 - 00223).

Takahashi failed to clearly disclose a translation module for transforming an input data stream into x-y coordinates corresponding to said input data stream.

However Skow discloses color interpolation algorithm 600 for transforming a pixel or an input data into I or x and J or y coordinates (Col 11, Line 30 – 37, See also Figure 4 and 5).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the automatic exposure control of Takahashi with color interpolation algorithm 600 of Skow. The motivation to do so

is to ease of tracking on each pixel or input data by converting the pixel or the input data in and X- Y or I – J coordinate (Col 11, Line 30 – 56, See also Figure 4 and 5).

9. Regards to claim 10, Takahashi in view of Skow further discloses the imaging processing apparatus according to claim 7,

10. Wherein said input data (Image data, Takahashi) stream comprises digital signal values from an analog-to-digital converter (Figure 3, Element 11, Takahashi) of a sensor array (Col 3, Section 0053, Takahashi).

11.

12. Regards to claim 11, Takahashi in view of Skow further discloses the imaging processing apparatus according to claim 7, further comprising:

A video input module (Figure 1, Element 132, Skow) for receiving said input data stream and forwarding said input data stream to said translation module (See Figure 1, Skow) .

13. Regards to claim 12, Takahashi in view of Skow further discloses the imaging processing apparatus according to claim 7, wherein said module for generating and using said histogram further comprises:

A histogram generator (Figure 3, Element 25, Takahashi) receiving said input data stream, said x-y coordinates, said tiles, and said assigned tile weight (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 – 00223, Takahashi); and

A control module (Figure 3, Element 25) providing said adjustment to said analog exposure control and analog gain control registers, said control module using said histogram created by said histogram generator, said tiles and said assigned tile weights to calculate said adjustment (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 – 00223, Takahashi).

14. Regards to claim 14, Takahashi discloses the digital camera system (Figure 3) according to claim 13, wherein said automatic exposure control and automatic gain control circuit further comprises:

At least one processor (Figure 3, Element 25);

A bus (See Figure 3, the signal line between AGC 5 and Camera Signal processing circuit 6 to Gate 9);

Global control registers (Figure 3, Element 9 and Element 25) for defining tiles of an image and assigning weights to said tiles (Page 4 and 5, Section 0088 - 0091See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 – 00223, Takahashi); and

A module (Figure 3, Element 25) for generating and using a histogram based on said x-y coordinates, said tiles, and said assigned tile weights, said module using said histogram to provide an adjustment to analog exposure and gain control registers (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 – 00223, Takahashi).

Takahashi failed to clearly disclose a translation module for transforming an input data stream into x-y coordinates corresponding to said input data stream.

However Skow discloses color interpolation algorithm 600 for transforming a pixel or an input data into I or x and J or y coordinates (Col 11, Line 30 – 37, See also Figure 4 and 5).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the automatic exposure control of Takahashi with color interpolation algorithm 600 of Skow. The motivation to do so is to ease of tracking on each pixel or input data by converting the pixel or the input data in and X- Y or I – J coordinate (Col 11, Line 30 – 56, See also Figure 4 and 5).

15. Regards to claim 19, Takahashi discloses the integrated circuit according to claim 18,

Wherein said automatic exposure control and automatic gain control circuit (Figure 13) further comprises:

Global control registers (Figure 3, Element 9 and Element 25, Page 3, Section 0053) for defining tiles of an image and assigning weights to said tiles (Page 4 and 5, Section 0088 - 0091See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 - 00223); and

A module (Figure 3, Element 25) for generating and using a histogram based on said x-y coordinates, said tiles, and said assigned tile weights, said module using said histogram to provide an adjustment to analog exposure and

gain control registers (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 - 00223).

Takahashi failed to clearly disclose a translation module for transforming an input data stream into x-y coordinates corresponding to said input data stream.

However Skow discloses color interpolation algorithm 600 for transforming a pixel or an input data into I or x and J or y coordinates (Col 11, Line 30 – 37, See also Figure 4 and 5).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the automatic exposure control of Takahashi with color interpolation algorithm 600 of Skow. The motivation to do so is to ease of tracking on each pixel or input data by converting the pixel or the input data in and X- Y or I – J coordinate (Col 11, Line 30 – 56, See also Figure 4 and 5).

16. Regards to claim 22, Takahashi the method according to claim 21, further comprising:

Defining tiles for a region of interest for said image using a grid system; assigning weights to said defined tiles (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 - 00223);

Creating an histogram using said x-y coordinates, said defined tiles, and said assigned weights (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 - 00223);

Using said histogram to generate an adjustment to said exposure and gain for said image (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 - 00223); and

Applying said adjustment to said analog exposure and gain control registers (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 - 00223).

Takahashi failed to clearly disclose a translation module for transforming an input data stream into x-y coordinates corresponding to said input data stream.

However Skow discloses color interpolation algorithm 600 for transforming a pixel or an input data into I or x and J or y coordinates (Col 11, Line 30 – 37, See also Figure 4 and 5).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the automatic exposure control of Takahashi with color interpolation algorithm 600 of Skow. The motivation to do so is to ease of tracking on each pixel or input data by converting the pixel or the input data in and X- Y or I – J coordinate (Col 11, Line 30 – 56, See also Figure 4 and 5).

17. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lippincott (US 5, 784,099) in view of Takahashi et al (US 2002 /0080247 A1) in further view of Skow et al (US 7,173,663 B2).

18. Regards to claim 16, Lippincott disclose a computer system (Figure 1) comprising:

A first processor (Figure 1, Element 141);

A memory device (Figure 1, Element 143) coupled to said processor via a bus (Figure 1, Element 140);

At least one input/output device (Figure 1, Element 130), said at least one input/output device coupled to said processor via said peripheral bus, said input/output device being an imaging device (See Figure 1);

Lippincott does not clearly teaches said imaging device further comprising:

A translation module for transforming an input data stream into x-y coordinates corresponding to said input data stream;

Global control registers for defining tiles of an image and assigning weights to said tiles; and

A module for generating and using a histogram based on said x-y coordinates, said tiles, and said assigned tile weights, said module using said histogram to provide an adjustment to analog exposure and gain control registers.

However Takahashi disclose imaging device comprising:

Global control registers (Figure 3, Element 9 and Element 25) for defining tiles of an image and assigning weights to said tiles (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 - 00223); and

A module (Figure 3, Element 25) for generating and using a histogram

based on said x-y coordinates, said tiles, and said assigned tile weights, said module using said histogram to provide an adjustment to analog exposure and gain control registers (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 - 00223).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the imaging device of Lippincott with Takahashi gate 9 and microcomputer 25. The motivation to do so is to estimate the luminance distribution in image frame and to provide effective information for the determination of the exposure.

The combination of Lippincott & Takahashi does not teach the imaging device comprising:

A translation module for transforming an input data stream into x-y coordinates corresponding to said input data stream;

However Skow discloses color interpolation algorithm 600 for transforming a pixel or an input data into I or x and J or y coordinates (Col 11, Line 30 – 37, See also Figure 4 and 5).

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify combination of Lippincott & Takahashi of Takahashi with color interpolation algorithm 600 of Skow. The motivation to do so is to ease of tracking on each pixel or input data by converting the pixel or the input data in and X- Y or I – J coordinate (Col 11, Line 30 – 56, See also Figure 4 and 5).

19. Claims 2, 3, 8, 9, 15, 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US 2002/0080247 A1) in view of Skow et al (US 7,173,663 B2).

20. Regards to claim 2, 3, 8, 9, 15, and 23, Takahashi in view of Skow discloses automatic exposure and automatic gain control circuit.

Takahashi in view of Skow failed to clearly disclose the automatic exposure and gain control circuit to comprise a grid system that is programmable.

OFFICIAL NOTICE is taken that it is obvious to one ordinary skilled in the art at the time the invention was made to modify the combination of Takashi and Skow with a grid system that is programmable. The motivation to do so is that prior to doing exposure and gain control the processor of the camera will get a signal either from user input or automatic input to give a higher weight to the a specific area of an image or object in order to get better picture quality. By making the gird system programmable camera will have a feature of giving weight to a sectors or tiles of image where the best exposure and gain will be obtained.

21. Regards to claim 20, Takahashi in view of Skow discloses automatic integrated circuit.

Takahashi in view of Skow failed to clearly disclose the integrated circuit being a Field Programmable Gate Array.

OFFICAIL NOTICE is take that it is obvious to one ordinary skilled in the art at the time the invention was made to modify CPU or computer system of the combination of Takahashi with Skow to be a field programmable gate arrays or FPGA. The motivation to do so is that field programmable gate arrays can be programmed after manufacture giving the user the camera the flexibility needed to perform exposure and gain control more effectively. FPGAs allow the camera or computer users to tailor microprocessors to meet their own need.

22. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lippincott in view of Takahashi (US 2002/0080247 A1) in further view of Skow et al (US 7,173,663 B2).

23. Regards to 17, Takahashi in view of Skow discloses automatic exposure and automatic gain control circuit.

Takahashi in view of Skow failed to clearly disclose the automatic exposure and gain control circuit to comprise a grid system that is programmable.

OFFICIAL NOTICE is taken that it is obvious to one ordinary skilled in the art at the time the invention was made to modify the combination of Takashi and Skow with a grid system that is programmable. The motivation to do so is that prior to doing exposure and gain control the processor of the camera will get a signal either from user input or automatic input to give a higher weight to the a specific area of an image or object in order to get better picture quality. By

making the gird system programmable camera will have a feature of giving weight to a sectors or tiles of image where the best exposure and gain will be obtained.

Claim Rejections - 35 USC § 102

24. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

25. Claims 18 and 21 rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi (US 2002/0080247 A1).

26. Regards to claim 18, Takahashi discloses an integrated circuit (Figure 3) comprising:

An automatic exposure control and automatic gain control circuit (Figure 13) for providing an adjustment for exposure and gain of an image (See Figure 13); and

An image processor (Figure 3, Element 5, 6 and 7) coupled to said automatic exposure control and automatic gain control circuit for forwarding an input data stream to said automatic exposure control and automatic gain control circuit from an image sensor (See Figure 13).

27. Regards to claim 21, Takahashi discloses an automated method for pixel exposure control and gain control, the method comprising:

Capturing pixel data corresponding to an image (Page 3, Section 0052); and

Adjusting automatically exposure and gain for said image by providing an adjustment to analog exposure control and gain control registers (Page 4 and 5, Section 0088, 0089, and 0091 See also Figure 6, 7 and 8 and Page 10 and 11 section 00215 – 00223).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SELAM t. GEBRIEL whose telephone number is (571)270-1652. The examiner can normally be reached on Monday-Thursday 7.30am-5.00pm.If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu NgocYen can be reached on 571-272-7320. the fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197

(toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Selam T Gebriel/
Examiner, Art Unit 2622
Monday, June 02, 2008

/Ngoc-Yen T. VU/
Supervisory Patent Examiner, Art Unit 2622